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**BANDING STUDIES OF SEMIDOMESTICATED
MALLARD DUCKS**

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F. C. LINCOLN has recently presented data and raised questions of extreme significance to persons interested in supplementing our precariously situated stock of wild ducks through the release of birds raised by artificial propagation.²

He points out that the banding operations of the United States Biological Survey had, at the time of writing, resulted in the marking of more than 125,000 native wild-caught ducks, of which an average of about 12 per cent had been recovered the first season, and of which the cumulative recovery over a period of years had been from 20 to 25 per cent. Contrasted with these recovery percentages, the recovery rate for the more than 3500 captive-bred Mallards liberated with Biological Survey bands amounted to a little less than 1½ per cent.

Lincoln (p. 313) suggests two possible explanations as to what may become of the hand-reared Mallards which are released never to be heard of again: "Possibly, because of their semidomestication, they are merely leading lives of indolence in the marshes, refusing to migrate or to fly for the hunter; or else, untrained in the rigors of natural environments, and being solely on their own resources, they may be unable to cope with living conditions and so succumb rapidly to the elements and to natural enemies."

The discontinuation in 1932 of a State Game Farm at Lansing, Iowa, made available for study a stock of several hundred Mallard Ducks of all degrees of domestication. The old game farm was situated adjacent to part of the Upper Mississippi Wild Life Refuge in bottomland environment of the same general type. The stock of ducks was left free to come or go, but most of the birds elected to remain about the game farm premises, at least for the first season after release.

An arrangement was made with the Fish and Game Commission by which Albert, whose residence was at Lansing, would be enabled to take care of whatever trapping and banding would be necessary to the investigational plans as worked out.

A special effort was made to band the wildest broods of well-grown young that could be caught, these young, of course, being the progeny of semidomesticated game farm adults. A total of 276 of

¹Journal Paper No. J303 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 320.

²"Restocking of Starlings with Hand-Reared Mallards not Proved Practicable." Yearbook of the United States Department of Agriculture, 1934, pp. 310-313.)

these young were banded from July 7 to September 12, 1932 (U. S. B. S. bands B668001-B669000, B671001-B672000, B672001-B672070). From July 7 to August 28, 1933, bands were placed on 74 more young, captured before they could fly (A721801-A721803, A721806-A721852, A721854-A721877).

Continued banding of adults, particularly migrants, was carried on whenever the opportunity presented itself, but further reference to this is omitted as not being within the province of this paper.

Concerted "round-ups" of all catchable ducks were made in December, 1932; on July 7, August 28, and November 20, 1933; on March 7 and September 20, 1934; on March 8, from April 23 to May 6, and on October 8, 1935. The birds were caught in a large baited pen trap, and we believe that the various catches represent nearly all of the ducks frequenting the precise vicinity at each time, up to March 7, 1934, when between 75 and 100 birds, both with and without bands, were observed to frequent the place but couldn't be caught. Thereafter, the birds became increasingly difficult to trap, and the checkups less reliable.

The resulting records may provide something of an inkling as to the habits and survival of the increase from Mallard stock originally propagated artificially, the young, however, being reared under conditions of freedom, although still somewhat attracted to their natal locality by the corn put out prior to the "round-ups." Although the corn was supplied irregularly in quantities much too insufficient to sustain them, that which was so easily available doubtless was favored over more inconveniently accessible corn to be found in fields on the mainland and over many foods occurring naturally in the waters and vegetation of the great refuge which the old game farm properly adjoins.

"B" SERIES (see this page above)

Of the 270 young of the "B" series, banded during the summer of 1932, but 3 (1.1 per cent) were reported as shot by hunters. Two of these (B668088 and B671060) were killed on the opening day of the duck season, October 1, 1932, at Lansing, near the place where they were banded. The third (B671972) was shot November 1, 1933, at Lynxville, Wisconsin, about ten miles down river.

Fifty-nine (21.4 per cent) were never trapped nor heard of again after the summer of 1932. Fifty-nine also (21.4 per cent) were recorded only in December, 1932, at the most but a few months after banding.

The balance of 155 (56.1 per cent) were recaptured from time to time subsequent to December, 1932. These, in the main, stayed about the game farm premises with fair regularity or until they finally disappeared. Seven of them, because of their infrequency or irregularity of capture, were suspected of having joined wild flocks during the seasonal flights.

The sex ratio of the birds in distinctive plumage when handled was 75 males to 80 females, or probably not far from a representative proportion for the species.

For data from the "B" series birds, summarized in more detail, the reader is referred to Table I.

TABLE I
SUMMARIZED DATA FROM "B" SERIES MALLARDS

<i>Young Birds Banded during Summer, 1932</i>	<i>Number of Birds</i>	<i>Percent</i>	<i>Sex Ratio M F</i>	<i>Ratio P</i>
Birds regularly				
Resident to May 6, 1935.....	60	21.8	25	35
Resident to September 29, 1934.....	14 ¹	5.1	9	5
Resident to March 7, 1934.....	42	15.2	17	25
Resident to November 20, 1933.....	8	2.9	7	1
Resident to summer, 1933.....	24	8.7	14	10
Resident to December, 1932.....	50	21.4	?	?
Birds apparently at large.....	7	2.5	3	4
Birds never retrapped nor heard of again.....	50	21.4	?	?
Returns from birds killed by hunters.....	3	1.1	?	?
Totals.....	270	100.1	75	80

"A" SERIES

The 74 young birds of the "A" series may be subdivided into 50 birds of normal development for the season and 24 from late broods. Both lots were banded before they were capable of flight and at about the same developmental stage, the 50 on July 7 and the 24 on August 28, 1933. The data from these lots may be presented separately (Tables II and III).

Eighteen (36 per cent) of the 50 birds in the early brood lot were never retrapped after banding. Two were found dead locally (A721807 and A721850); none were reported killed by hunters. The sex ratio of the other 32 which had records as repeaters was 13 males to 19 females.

Of the 24 brood birds, 9 (37.5 per cent) were never retrapped nor heard of after banding on August 28, 1933. None were reported killed by hunters. The sex ratio of 15 birds later retrapped was 3 males to 12 females. Four females, on the basis of their dates of capture, may have been leading independent lives and migrating with the flights.

TABLE II
SUMMARIZED DATA FROM "A" SERIES NORMAL-BROOD MALLARDS

<i>Normal Brood Young Banded July 7, 1933</i>	<i>Number of Birds</i>	<i>Percent</i>	<i>Sex Ratio M F</i>	<i>Ratio P</i>
Birds regularly				
Resident to May 6, 1935.....	10	32.0	6	10
Resident to September 29, 1934.....	6	12.0	2	4
Resident to March 7, 1934.....	2	4.0	1	1
Resident to November 20, 1933.....	3	6.0	1	2
Resident to August 28, 1933.....	5	10.0	3	2
Birds apparently at large.....	0
Birds never retrapped nor heard of again.....	18 ¹	36.0	?	?
Returns from birds killed by hunters.....	0
Totals.....	50	100.0	13	19

¹One of these, a male, was subsequently found dead.

²Two birds were subsequently found dead.

TABLE III
SUMMARIZED DATA FROM "A" SERIES—LATE-BROOD MALLARDS

<i>Late-brood Young Banded August 28, 1933</i>	<i>Number of Birds</i>	<i>Per cent</i>	<i>Sex</i>	<i>Ratio M/F</i>
Birds regularly				
Resident to May 6, 1935.....	4	10.7	1	3
Resident to September 29, 1934.....	0		1	2
Resident to March 7, 1934.....	3 ^a	12.5	1	2
Resident to November 20, 1933.....	4	10.7	1	3
Birds apparently at large.....	4	10.7	0	4
Birds never retrapped nor heard of again.....	0	37.5	?	?
Returns from birds killed by hunters.....	0			
Totals.....	24	100.1	3	12

^aOne female subsequently found dead.

SUMMARY AND CONCLUSIONS

From Table IV, in which the salient data from both "B" and "A" series are summarized, a few conclusions may be drawn. What may be the full significance of some of the data we can at this time only conjecture.

TABLE IV
SUMMARY OF DATA FROM BOTH "B" AND "A" SERIES MALLARDS

<i>Young Birds Banded during summers of 1932 and 1933</i>	<i>Number of Birds</i>	<i>Per cent</i>	<i>Sex</i>	<i>Ratio M/F</i>
<i>Total: 350</i>				
Birds regularly				
Resident until approximately the second summer after banding.....	64	26.0	41	53
Resident until the first summer after banding.....	80	22.9	40	40
Resident until the fall following banding.....	70	21.7	7	10
Birds apparently at large.....	11	3.1	3	8
Birds never retrapped after banding.....	80	24.6	?	?
Returns from birds killed by hunters during the first two hunting seasons after banding.....	3 ^b	0.9		
Totals.....	250 ^a	100.1	91	111

The majority of the data are nearly equally divisible into four chief categories. A little over one fourth of the 350 birds banded while young remained regular local residents until the second summer following. A little less than one-fourth remained until the first summer before they were lost track of; a similar number were recorded no later than the fall following banding. Almost exactly one fourth were never retrapped nor heard of again.

It is practically a certainty that a strong 60 per cent or more of the originally banded young ducks were no longer on the area two years afterward. The figure may be as high as 70 per cent. The preponderance of the birds which have disappeared, we may suppose, are either dead or are living elsewhere.

Numbers of those which have disappeared from the immediate area may be living somewhere, but the very low percentage of

^aAll shot locally, or practically so.^bFour birds were subsequently found dead locally.

returns from birds shot by hunters (two-season total of 0.9 per cent compared to Lincoln's 12 per cent first-season expectation for wild birds) does not indicate that very many have fully reverted to the wild state. It is significant to note that despite the immaturity of these birds at banding, three quarters were known to have attained December size.

One reasonable supposition is, if the records of the missing birds have not been terminated by death, that at least some of them have migrated only to establish themselves *en route* on refuges on which they have found things to their liking. The corn and open water of city parks, game-farm wintering pens, private as well as public refuges, great and small, all on occasion have proved attractive enough to draw and hold stragglers from the outside, many of which have been distinctly tame from the time that they have come in. The observed reaction of more or less tame Mallards to steady feeding and their ultimate degeneration into "barnyard puddle ducks" surely support Lincoln's suggestion that some may be "merely leading lives of indolence in the marshes." It is doubtful that these birds would be able to live sedentary lives in North Central States marshes without winter feeding by man.

The authors, however, consider most plausible Lincoln's alternative suggestion to the effect that the missing birds may no longer exist. One would think that the tameness of the birds which would tend to lead them to man-supplied corn in refuges would also tend to lead them within shotgun range to some extent. But we have to confront us always the exceedingly low rate of banding returns. Indeed, whatever else the data may or may not show, one is not to escape the obvious conclusion that few of the semidomesticated mallards are shot.